U. S. DEPARTMENT OF COMMERCE

CIVIL AERONAUTICS JOURNAL

ISSUED TWICE MONTHLY BY THE
CIVIL AERONAUTICS ADMINISTRATION

VOLUME 2 WASHINGTON, OCTOBER 1, 1941 NUMBER 19

Library
Dur... OCT 21 1941

Civil Aircraft Production Up For 1941 Half

Output for First 6 Months 3,775 Units, 65% Gain Over 1940

Domestic civil aircraft production during the first 6 months of 1941 reached 3,775 units, an increase of 65 percent over the 2,289 civil aircraft produced in the corresponding 6 months of 1940, according to statistics compiled by the Civil Aeronautics Administration. Output of civil aircraft during the calendar year 1940 totaled 6,748 units.

The production figures reflect added emphasis on the trend toward increased performance, especially in the light plane category which became pronounced during the first 6 months of last year.

Output of 1 and 2 place single engine landplanes for the 1941 6-month period was 2,880 aircraft, an increase of 61 percent over the 1,786 produced in the 1940 months.

In the 3–5 place single engine landplane class, the 1941 production was 757 units, up 91 percent from the 396 produced in 1940, while 3–5 place multiengine landplanes output rose from 3 in 1940 to 7 in 1941. In the 6–17 place multiengine category, production during the first half of this year was 21, a gain of 91 percent over the 11 produced in the 1940 period. Production of airliner-type aircraft—18 place and over multiengine planes—remained about the same, 65 produced in the 6 months of this year against 66 in the 1940 period.

(*See* PRODUCTION, *page 253*)

414515—41

New Handbook Describes CAA's Defense Activity

CAA FOR DEFENSE, a graphic presentation of the Civil Aeronautics Administration's contribution to the national defense program, is now available. Copies may be obtained from the Publications and Statistics Division, Civil Aeronautics Administration, Washington, D. C.

The booklet, which employs both charts and photographs as well as text to tell its story, is divided into four parts—FLYING FOR DEFENSE; BUILDING FOR DEFENSE; AIRWAYS OF DEFENSE; and DEFENSE, SAFETY, AND THE FUTURE.

The Foreword was written by Brig. Gen. Donald H. Connolly, Administrator of Civil Aeronautics, and points out the greatly-increased volume of work of the C. A. A. during the last 2 years. A brief discussion of civil aviation today and tomorrow, by Robert H. Hinckley, Assistant Secretary of Commerce for Air, also is included.

Passenger Safety Record for U. S. Airlines Rises

8-Month Mark in 1941 4 Times Better Than Any Previous Year's

The Civil Aeronautics Board has announced that during the first 8 months of 1941 the domestic and international airlines operating under the American flag flew more than 150,000,000 passenger-miles (a passenger-mile equals 1 passenger carried 1 mile), equivalent to more than 50,000 individual passenger trips from coast to coast of the United States, for every passenger fatality.

The corresponding record for the first 8 months of 1940 was 39,000,000 miles per passenger fatality, and that for the first 8 months of 1939 was 27,000,000.

For no year prior to 1939 did the number of passenger-miles per passenger fatality for the first 8 months of the year exceed 25,000,000. The passenger safety record for the first 8 months of 1941 was, therefore, nearly four times as good as that for the corresponding period of any previous year.

The Board further announced that at the end of August a total of more than 60,000,000 airplane-miles had been flown on the domestic airlines, with more than 700,000,000 passenger-miles of transportation service rendered, since the last accident involving the death of any passenger or any member of an airliner crew.

U. S. DEPARTMENT OF COMMERCE

CIVIL AERONAUTICS JOURNAL

ISSUED TWICE MONTHLY BY THE CIVIL AERONAUTICS ADMINISTRATION

VOL. 2 OCTOBER 1, 1941 No. 19

Published with the approval of the Director of the Bureau of the Budget

Issued on the 1st and 15th of each month. Subscription $1 (foreign $1.50) per year. Single copies 5 cents. Sold by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C.

CONTENTS

	Page
Civil aircraft production up for 1941 half	245
Passenger safety record for United States airlines rises	245
New handbook describes C. A. A.'s defense activity	245
Safety bulletin on engine icing issued by C. A. B.	246
Toward Safer Flight	246
New aeronautical publications	246
PRIVATE FLYING	
52,084 graduations from C. P. T. courses in fiscal 1941	247
Conditions outlined for installation of air intake screens	247
Pilots requested to send fewer radio messages	247
AIR SAFETY	
Pilots urged to take check flight after lapse in flying	248
Individual accident reports	248
46 glider accidents reported to Board in 3-year period	249
AIR TRANSPORTATION	
High priority rating given for transport plane upkeep	250
Pan American route to Africa approved	250
Non-scheduled carrier certification proposed	250
New stops authorized on United routes	250
Aluminum for 2,800 planes	250
Clippers to stop at Suva	251
AIRWAYS AND AIRPORTS	
Chicago to become second airport with ground traffic control system	251
Airport projects approved	251
Traffic pattern needed for training fields	251
MANUFACTURING AND PRODUCTION	
Change in design of fuel tank vent recommended	252
New type approvals	252
Aircraft plant expansion	252
Revisions suggested on span distribution	252
14,100 July increase in aircraft employment	252
OFFICIAL ACTIONS	
Orders	254
Regulations	255
Status of Parts of the Civil Air Regulations and amendments	256

Safety Bulletin On Engine Icing Issued by C. A. B.

The following is a safety bulletin, written by Alexander N. Troshkin, air safety specialist in power plants, and issued by the Civil Aeronautics Board.

Reports have been received from air-carrier pilots of adapter temperature readings of approximately 35° F or higher during operating conditions which were strongly indicative of induction ice. This was usually attributed to a defective or off calibration thermometer.

During the current induction system deicing investigation being conducted under the direction of the N. A. C. A. by the National Bureau of Standards this same phenomenon of temperature readings above 32° F was observed even though the ice formation was definitely visible in the adapter.

Operating Conditions

The conditions of the test operations were such as to simulate actual engine operations with respect to air, fuel and water ingestion in the induction system. Air was passed through the induction system of a Wright G200 engine at the rate of approximately 4,000 pounds per hour which is equivalent to operating the engine under cruising conditions of 625 h. p. Under these operating conditions water was admitted into the induction air through a series of spray nozzles at the rate of 15 grams per cubic meter of air to simulate a water content in the mixture equivalent to that which would be obtained when flying through heavy rain.

When the gasoline was turned on the mixture temperature thermometer in the adapter dropped to 20.5° F and subsequently it gradually rose to 32° F,

(*See* ENGINE ICING, *page 251*)

New Aeronautical Publications

Among recent Government publications dealing with the subject of aeronautics are the following:

AMERICAN AIR ALMANAC—1941, September–December: pages 487–730, chart (Navy Dept.); provides in convenient form the astronomical data required for aerial navigation. Price $1. Classification number N 11.6/3 : 941/3.

AIRCRAFT NAVIGATION MANUAL — Rev. 1941 (Hydrographic Office, H. O. No. 216). 258 pages, illustrated. Price, cloth, $1. Classification number N 6.8 : 216/941. Gives information relating to aircraft navigation instruments, dead reckoning navigation, radio navigation, and celestial navigation.

NATIONAL AIRPORT — Pictorial study, 1941 (Civil Aeronautics Administration). 17 pages illustrated. Price 15 cents. Classification number C 31.102 : Ai 7/3.

When ordering these publications, send remittance by postal money order, express order, coupons, or check to the Superintendent of Documents, Government Printing Office, Washington, D. C. Always give title, issuing office, or classification number when listed.

Profiting by the experience of someone else is a well established form of practical wisdom. It has been applied to the promotion of air safety by the Standards Division of the Civil Aeronautics Administration's Civilian Pilot Training Program.

In issuing bulletins to flight contractors operating under the C. P. T. program, the Standards Division is primarily concerned with the safe and efficient use of aircraft in training the thousands of young pilots taking C. P. T. courses. However, it does not overlook the fact that what proves beneficial to the operation of the aircraft involved in so large a program as the C. P. T. undoubtedly will be of value to the field of civil aviation as a whole. Hence when a particularly knotty problem is solved, the advice and suggestions designed to prevent its recurrence are passed along not only to all flight contractors, but to others who may find the information useful.

A leading gasoline company was so impressed by a bulletin warning against the use of automobile gasoline for aviation purposes that it sought permission to reprint and distribute the bulletin at its own expense. An insurance firm likewise made private use of the bulletin.

Through an informational program, the Standards Division fostered an intelligent understanding of what parachutes are, what they are supposed to do, and how they should be taken care of. As a result of the program, parachute firms which had previously been more or less indifferent to the use of parachutes in civil aviation as contrasted to their military uses, cooperated actively in further efforts to educate pilots, instructors, and field personnel in the use and care of parachutes as instruments of air safety.

The Standards Division tries to anticipate trouble and be ready with effective prevention measures. But it also is constantly on the lookout for indications of difficulties, no matter how trivial, that require speedy attention. It may be a single sentence in a field report that affords the original stimulus to investigate, or it may be a series of complaints that calls the division's attention to some operating difficulty. In any case, immediate steps are taken to determine the cause and then to find a remedy. Members of the ground, flight, and maintenance sections check over the problem in conference. If it is a matter that concerns some other department of the C. A. A., such as medical or radio, then experts in those divisions

are consulted. Every effort is made to take full advantage of the accumulated brains and information available in the rest of the organization.

After the problem has been thoroughly analyzed, a draft is made of orders to flight and ground contractors, or merely of technical suggestions, whichever is considered the best way of treating the problem at hand. This is finally embodied in a bulletin, copies of which are sent to all flight contractors for the C. P. T., and, if the subject warrants, to other persons in private flying or industry.

Recent bulletins dealing with subjects of wide interest are the bulletin on the installation and maintenance of radio equipment, and the bulletin on the inspection of airplane cabin heaters. The latter bulletin, among other things, outlines the symptoms of carbon monoxide gas and tells what should be done when its effects are felt.

—Keep 'Em Flying—

52,084 Graduations From C. P. T. Courses In Fiscal 1941

Graduations from the controlled courses of the Civilian Pilot Training Program during the fiscal year 1941 totaled 52,084, according to statistics compiled by the Civil Aeronautics Administration. Total enrollment in all C. P. T. courses during the year ended June 30, 1941, was 65,343, and at the end of the year, 4,592 individuals were still in training. During the year there were 8,667 discontinuances, which included all cases of failure to graduate.

Classified according to instruction taken, there were 46,726 enrollments and 38,475 completions in the elementary course, and 8,225 enrollees and 6,545 graduates in the secondary course. There were 10,392 enrollments and 7,064 graduations in the refresher and instructor courses.

The following tabulation shows the statistics on enrollments and graduations during the year, classified according to courses taken, and further broken down into results for the summer and fall 1940 and the spring 1941 phases:

Conditions Outlined For Installation of Air Intake Screens

A number of reports have been received by the Civil Aeronautics Administration requesting permission to install screens on carburetor air intakes as powerplant failures have occurred because of bugs getting into the carburetor.

The C. A. A. does not object to the installation of carburetor screens providing they are installed under the following conditions:

1. The intake air scoop must be on the outside of the cowling.
2. The screen is to be installed across the mouth of the intake air scoop, and is to be made of brass or copper of not less than 1/16-inch mesh openings.
3. This installation is not to be made unless there is another method of air intake other than through the screen; such as a carburetor heater, or another opening in the air scoop that may be used in case the air flow through the screen should become restricted during flight.
4. The addition of this screen is considered a minor alteration, and in view of the instruction contained herein, a repair and alteration Form 337 need not be submitted. However, a note describing the alteration should be entered in the engine log book by a certificated engine mechanic before the airplane is returned to service.
5. This screen is to be removed during cold weather operations.

It is suggested that a frame be made of material approximately ½ inch wide that will fit snugly over the outside of the air scoop and the screen soldered to this frame. The entire unit is then to be attached to the air scoop with saftied fillister or round head screws and nuts.

Considerable trouble has been experienced with the air intake butterfly shaft wearing very rapidly on the air scoop. This condition may be eliminated by adding additional bearing surface for the shaft such as brazing a washer or nut on the outside of the air scoop.

Pilots Requested To Send Fewer Radio Messages

In a recent announcement, the Administrator of Civil Aeronautics, Donald H. Connolly, said that the airways communications facilities are becoming overtaxed, due to the increasing number of aircraft equipped with radio using the Federal airways, and asked the cooperation of all pilots in an effort to reduce the number of communications sent. He pointed out that the situation was particularly acute at points where training activities are being carried on. A great many requests are being received which could be eliminated if pilots would listen to the scheduled broadcasts rather than make calls for weather information just after the sequence weather reports have been sent out on the regular schedule, he said.

New pilots particularly are asked to cut down on the number of test calls they make to distant stations when they are trying out the maximum range of a new transmitter. All pilots are asked to tune in carefully on the station they are trying to get and to wait for a reply

(*See* RADIO, *page 250*)

Number of Trainees in the Civilian Pilot Training Program

(*Fiscal year 1941*)

	Summer 1940		Fall 1940		Spring 1941		Fiscal year total			Grand total
	Elementary	Secondary	Elementary	Secondary	Elementary	Secondary	Elementary	Secondary	Refresher and instructor	
Enrolled	17,211	1,170	14,786	2,860	14,729	4,195	46,726	8,225	10,392	65,343
Completed	14,994	1,021	12,411	2,080	11,070	3,444	38,475	6,545	7,064	52,084
In training	206	9	412	373	2,343	308	2,961	690	941	4,592
Discontinued	2,011	140	1,763	407	1,316	443	5,290	990	2,387	8,667

EXPLANATION: "Enrolled" refers exclusively to students who actually began training.
"Completed" refers to satisfactory graduation from the outlined controlled courses.
"In training" includes individuals whose records are not finally disposed.
"Discontinued" comprises all cases of failure to graduate.

Pilots Urged To Take Check Flight After Lapse in Flying

A recent safety bulletin of the Civil Aeronautics Board cautions pilots who have not flown for several weeks to take a check flight before resuming regular flying. Text of the bulletin follows:

A Check Flight to Forestall a Check-out

Pilots.—The Civil Air Regulations now require that a student pilot who has not flown within 90 days receive a flight check given by a certified instructor. But any pilot who hasn't flown for a period of several weeks should have his skill checked. *Don't Let "Pride" Stand In Your Way. Pride Goeth Before a Fall.* If you haven't flown for 3 weeks or longer you'll exhibit wisdom by taking a check flight.

TAKE TIME FOR A CHECK FLIGHT——AND KEEP FLYING.

[INDIVIDUAL ACCIDENT REPORTS]

Fuel Exhaustion on Unauthorized Night Flight

Robert Kleiner was seriously injured in an accident near River Grove, Ill., about 12:48 a. m. on October 22, 1940.

Pilot Kleiner had received about 6 hours dual instruction, but he held no certificate. The airplane, a Piper, Model sL–65, was severely damaged. It was not equipped with lights or flares for night flying.

The pilot took-off solo from the Park Ridge Airport at River Grove about 11:35 p. m. He flew in the vicinity of the airport for about an hour and 10 minutes when the fuel supply became exhausted. The aircraft descended in a glide until it struck a tree and fell to the ground alongside some railroad tracks.

After the accident the pilot reported to the local police that he had been struck by a hit-and-run automobile driver, and the identity of the pilot of the wrecked plane was not established until a few days afterwards. Investigation revealed that he had taken the airplane without the knowledge or permission of its owner.

Probable cause—Exhaustion of fuel supply in darkness.

Contributing factor—Inexperience of the pilot.

Pilot Swoops Low To Ask Directions—Fatal Stall

In an accident near Dranesville, Va., on October 1, 1940, John Gormley was fatally injured. A student of the Civilian Pilot Training Program, he held a private pilot certificate with a class 1 land rating and had logged approximately 50 hours, about 17 hours of which had been on 2S aircraft. The airplane, a Waco, Model UFF–7, received major damage.

The pilot took off from Congressional Airport, Rockville, Md., about 8:15 a. m. for the purpose of practicing acrobatic maneuvers. While practicing the scheduled maneuvers, he became lost. In an effort to find his way back to the airport, he flew very low over some farmers in a field near the Potomac River. After making several circles around these men he descended to an altitude estimated as 40 feet and shouted, "Which way to the airport?" Almost immediately, while one of the farmers was trying to point the direction, the aircraft stalled, fell off to the left, and struck the ground in a steep nose-down attitude.

The pilot, who had recently graduated from the primary course of the Civilian Pilot Training Program, was taking his secondary instruction under Kimball J. Scribner at the Congressional School of Aeronautics, Rockville. His instructor stated that the student had experienced difficulty in orientating himself and in reading maps. The site of the accident was approximately 10 miles from the Congressional Airport. Examination of the wreckage and statements from witnesses indicated that the action of the pilot in flying extremely low and focusing his attention on people on the ground had resulted in a stall. There were several fields in the vicinity on which a landing could have been made. There was no evidence of failure of the controls or structure or of malfunctioning of the engine.

Probable cause.—Stall at low altitude.

Contributing factors.—(1) Action of pilot in directing his attention to people on the ground, (2) poor navigation.

Incautious Passenger Struck by Propeller

Allen Lee was fatally injured when struck by a propeller of a seaplane near a ramp in Juneau Harbor, Alaska, on June 27, 1940. Lee had been a passenger on the Fairchild Seaplane Model 71 which was powered by a 420-horsepower Wasp C–1 engine.

The seaplane had been taxied out into the bay by commercial pilot James Rinehart, who held a 3S water rating. Lee and Leonard James were his passengers. A cylinder began to misfire while the aircraft was taxiing to a take-off position, so the aircraft was brought to a point adjacent to the ramp for engine check. The pilot turned off the ignition switch and warned the passenger not to get in the path of the propeller, as a cylinder might fire due to self-ignition caused by its heated condition.

According to Rinehart, Lee climbed down to one of the aircraft floats, failing to heed the warning against going forward on the pontoon until the heated engine had ceased self-igniting, and had come to a complete stop. Lee, according to James, went out the front door, and was struck on the head and shoulder by the propeller when a cylinder self-ignited.

Probable cause.—Passenger walked into path of a propeller immediately before self-ignition of cylinder occurred.

Contributing factor.—Failure of passenger to obey instructions of pilot.

Overloaded Plane in Crash

An overloaded plane piloted by William E. Moore and carrying three nonrevenue passengers crashed near Cortland, N. Y., on June 4, 1940.

Moore, who had logged 3,072 flying hours, was flying a Stinson SR–9C, powered by a Lycoming R–680–D5, 245 horsepower engine, on a cross-country flight from Ogdensburg, N. Y. to Harrisburg, Pa. It is indicated that the fuel tanks had been filled to capacity and that the permissible gross weight of the aircraft was exceeded by 182 pounds. The aircraft was flying at an altitude of approximately 3,500 feet over rugged and heavily-wooded terrain about 1½ hours later when the engine lost power. The pilot cut the ignition and prepared to land in a valley which was bordered on both sides by steep banks to a height of approximately 1,000 feet.

The evidence indicates that the pilot lost sight of the field and attempted to correct his direction. This attempt was interrupted when a team of horses was observed to be driven onto the field, forcing the pilot to change his approach. In his effort to stretch the glide, the pilot stalled the aircraft just above the ground over a point approximately 150 feet short of the field boundary. The landing gear sheared upon impact, the aircraft continuing into a skid until it struck a thorn tree and was demolished. The pilot and two passengers sustained minor injuries; the other passenger was seriously injured.

Subsequent inspection of the engine disclosed that a pin lock on the connecting rod of the piston in No. 9 cylinder had failed, permitting the connecting rod to work free of the crankshaft.

Probable cause.—Engine failure, necessitating a forced landing on unsuitable terrain.

Contributing factor.—Overloading of aircraft which probably had some adverse effect on the glide characteristics of the aircraft subsequent to engine failure.

Inexperienced Pilot Stalls at Low Altitude

Milton Strubble sustained serious injuries in an aircraft accident at the Hot Springs Municipal Airport, Hot Springs, Ark., on September 22, 1940. The airplane, a Piper H–2, received major damage. The pilot, who held a student certificate, had received about 12 hours' dual flight instruction and had accumulated 40 hours solo flight time.

Prior to the final flight the student had been practicing take-offs and landings on the airport, in alternate directions, using both north-south and east-west runways. The weather was calm at the time and permitted this procedure. In the early flights, take-offs and landings were made to the south on the north-south runway. On the last flight a normal take-off was made to the east on the east-west runway. The pilot states that, as the airplane attained an altitude of about 100 feet over the east end of the field, the engine failed, so he attempted to turn back. During the turn the airplane stalled at an altitude of about 50 feet.

Before an inspection could be made of the engine, the damaged aircraft was totally destroyed in a hangar fire. Inspection of the propeller indicated no power was being applied at the time of impact.

Probable cause.—Pilot stalled the airplane during a turn at low altitude.

Contributing factor.—Inexperience of pilot.

Carelessness in Starting Aircraft Engine

Private pilot Harry L. Pitcher's action in starting an aircraft engine without a competent person in the plane to operate the controls caused the accident near Pontiac, Mich., on August 21, 1940, in which Wallace Harris was seriously injured.

Pilot Pitcher, the owner of the airplane involved, a Fairchild 24J, powered by a Warner Super Scarab S–50, 145 horsepower, was preparing to take-off when the accident occurred. Mrs. Helen Parmalee, who was to accompany him as a passenger, was seated in the airplane on Pitcher's privately owned airport when the pilot attempted to start the engine by use of the electric starter. The storage battery of the starter was too weak to turn the engine.

The pilot, who had logged 318 hours of flying time, then set the parking brakes; climbed out of the airplane, and attempted to start the engine manually. The engine started readily with a throttle setting which permitted it to attain about 1,100 revolutions per minute. The parking brakes failed to hold the airplane; the pilot held on to the left wing tip, causing the airplane to circle to the left as he shouted to the passenger to close the throttle, which she did. Mr. Harris, an employee of the estate, ran toward the airplane to assist the pilot and was struck by the revolving propeller. He sustained serious injuries on both hands and arms.

Probable cause.—Action of pilot in starting aircraft engine without a competent person in aircraft to operate controls.

Contributing factor.—Malfunctioning of parking brakes.

Reckless Pilot Stalls During Acrobatics

While making a solo flight in the vicinity of the Huntingburg, Ind., Airport on August 15, 1940, George Norman, Jr., an uncertificated pilot, met with an accident which resulted in fatal injuries to himself and major damage to the aircraft. The aircraft was a Curtiss-Wright, Jr., model CW–1. Its airworthiness certificate, however, had expired April 15, 1939.

On the afternoon of the accident the pilot, accompanied by his passenger, flew to the Huntingburg Airport, where he landed. A short time later he took off solo in a south-southwest direction. A left turn was then made at a low altitude following take-off. The plane was flying in a northerly direction when the pilot attempted a right wing over. The aircraft stalled during the maneuver and dived to the ground.

Subsequent investigation disclosed that Norman formerly held a student pilot certificate which expired on July 15, 1939.

Probable cause.—Pilot stalled the airplane while executing an acrobatic maneuver at low altitude.

Contributing factors.—1. Recklessness of the pilot. 2. Inexperience of the pilot.

Inadvertent Spin Causes Crash

Commercial pilot Sherman Lutz, accompanied by student pilot Charles Neyhart took off on August 7, 1940, from State College, Pa., Airport in an Aeronca 60 TF, powered by a Franklin 4AC–150 A, 60 horsepower engine, for an instruction flight.

The airplane had attained an altitude of approximately 1,500 feet following take-off when the student executed several shallow and steep turns. The pilot then took over the controls and demonstrated several split-S turns and stalls, the student following through on the controls. Several of these maneuvers had been executed when the pilot pulled the airplane up past stalling point into a near inverted attitude where it stalled at an altitude of about 1,200 feet and fell off into a right spin which continued until the right wing struck a tree and the airplane fell to the ground and was demolished. Both occupants were seriously injured.

Subsequent investigation disclosed that the airplane was new, and that neither instructor nor student was equipped with a parachute during the above-cited acrobatic maneuvers.

Probable cause.—Pilot failed to recover from stall and spin.

46 Glider Accidents Reported to Board In 3-Year Period

Forty-six glider accidents were reported to the Safety Bureau during 1938, 1939, and 1940, according to a survey by the Civil Aeronautics Board. Of these, 16 were fatal, 10 were serious, and 20 involved minor or no injury. Of all gliders, 5.6 percent were involved in fatal accidents in 1940, as compared with 1.6 percent of nonair carrier aircraft during the same year.

The survey shows that the proportion of fatal and serious to minor injury accidents is much higher in the case of glider accidents than in the case of powered-aircraft accidents. Likewise, the damage to the gliders is more severe, on the average, than in the case of powered aircraft.

Of the 13 accidents occurring to uncertificated glider pilots, all but one were either fatal or serious. This proportion is so far out of line with that of pilots in other classifications that it indicates that the passing of a C. A. A. test is worthwhile from a safety viewpoint, the Board said.

The percentage of certificated gliders, while low in comparison with the percentage of certificated powered aircraft, has increased from 17.2 percent in 1937 to 27.3 percent in 1940. The total number of gliders has decreased in the same period from 273 to 143. However, the number of gliders is probably increasing at present, because the Army is now using them for military purposes.

Pilot's Misunderstanding of Signals Causes Crash

The Civil Aeronautics Board has reported upon the investigation of an accident which occurred near the Easterwood Airport, College Station, Tex., on October 28, 1940, resulting in serious injury to H. Guy Smith, and minor injury to Thurston C. Carlisle. Carlisle, who held a commercial certificate with class 1 and 2S land and instructor ratings, had accumulated about 682 solo flying hours. Smith held a commercial certificate with 1S land and water, 2S land, and instructor ratings, and had logged 278 solo flying hours. The airplane, a Meyers Trainer, model OTW, was extensively damaged.

Carlisle, with Smith in the front cockpit, took-off to determine the ceiling and other weather conditions before beginning regular student instruction. Shortly, afterward, at an altitude of about 300 feet, Smith shook the stick to attract the pilot's attention. Carlisle, thinking that Smith wanted to take over, relinquished the controls, raising his hands to indicate his action. The airplane immediately made a turn to the right, dived, recovered, and entered another dive which continued until it struck a tree and crashed to the ground.

(*See* PILOT'S MISUNDERSTANDING, *page 250*)

High Priority Rating Given For Transport Plane Upkeep

Continuous Operation Assured by Action

With commercial air transportation zooming to new high levels, Donald M. Nelson, Director of Priorities, has issued a limited blanket rating order assuring the continuous operation at a high degree of efficiency of air lines in the United States.

The order assigns the high defense rating of A-3 to deliveries of all materials of any nature which enter into the upkeep of planes and ground equipment. An air carrier or a supplier of maintenance equipment and repair parts wishing to secure the assistance of the plan should apply to the Priorities Division on Form PD-96. Each assignment of the rating will cover a 3-month period, and the amounts and kinds of material so covered will be based on information furnished in the application.

Provision is made in the order for the immediate termination of the assignment of the rating if it is applied by an air carrier to deliveries in excess of the amounts specifically prescribed by the Priorities Division.

A supplier may apply the rating only if the materials to be delivered cannot be secured without it. He is prohibited from using the rating to secure deliveries in greater quantities or on earlier dates than are required for delivery on schedule of the rated material, or to obtain material which will not be used by his customer for the maintenance and repair of its aircraft and equipment.

The order may be extended by an air carrier by executing a copy and furnishing it to his supplier. A supplier may follow the same procedure where necessary to secure deliveries from a subsupplier.

During the first 7 months of 1940, airlines carried 1,427,350 paying passengers. For the same period of this year, the number of such passengers was 1,942,738. This is an increase of more than 36 percent.

Air express carried during these periods jumped from 6,261,209 pounds in 1940 to 9,665,064 pounds in 1941, an increase of nearly 54 percent.

On June 30, 1940, there were 322 airline planes on regular flights within the continental boundaries of the United States. On June 30 of this year, there were 365 planes engaged in these operations.

Non-scheduled Carrier Certification Proposed

Safety Regulation Release No. 64, containing a proposed Part 42 of the Civil Air Regulations, has been issued by the Civil Aeronautics Administration. The purpose of the new part is to provide a means of granting air carrier operating certificates to those operators who conduct nonscheduled operations as common carriers.

Prior to final submission of the proposed regulations to the Civil Aeronautics Board, the Administration has distributed copies of the release and has invited comments from all persons affected. The release may be obtained from the Publications and Statistics Division, Civil Aeronautics Administration, Washington, D. C.

—Keep 'Em Flying—

New Stops Authorized On United Routes

Bellingham, Wash., has been authorized as a stop on United Airlines' route between Seattle and Vancouver, British Columbia, in an order issued by the Civil Aeronautics Board which amends United's certificate of public convenience and necessity for that route. The Board's order has been approved by the President of the United States and is effective from September 8, 1941.

The Board also amended United Airlines' certificate for its route between Seattle and San Diego, Calif., to include Salem and Eugene, Oreg., as intermediate stops but denied the carrier's application for the inclusion of Klamath Falls, Oreg., as a stop on that route.

Pan American Route To Africa Approved

A temporary certificate authorizing Pan American Airways, Inc., to operate a transport service for the carriage of mail, passengers, and property between the United States and Africa has been issued by the Civil Aeronautics Board. In accordance with the Civil Aeronautics Act, it was approved by the President of the United States.

This service will be operated from Miami, Fla, via San Juan, P. R.; Port of Spain, Trinidad; Belem, Brazil; Natal, Brazil; and thence across the South-Atlantic Ocean to a point or points in Southwest Africa.

The rights given under this certificate will expire 5 years from the date of its issuance, or 6 months after the date upon which the Secretary of War notifies the Civil Aeronautics Board that he has determined the continuance of the service is no longer required in the interest of national defense, whichever period first expires.

—Keep 'Em Flying—

Pilot's Misunderstanding

(*Continued from page 249*)

Subsequent investigation disclosed that Smith had shaken the stick to attract the pilot's attention in order to point out to him a small rain cloud, and that he did not know until after the accident that Carlisle was not in control of the ship. Carlisle, on the other hand, thought that Smith had taken over, and he did not realize until after the crash that the ship was not under control.

Probable cause. — Misunderstanding of pilots as to who should take over controls.

Radio

(*Continued from page 247*)

instead of calling a second station while listening for the first one to answer.

The Administrator also said that pilots could greatly relieve the congestion at terminal points if they would make full use of the intermediate stations. Meteorological and general airway information is available at these smaller stations and pilots are requested to contact them for required information.

—Keep 'Em Flying—

Aluminum for 2,800 Planes

Judging from incomplete returns so far, experts of the Office of Production Management estimate that the national collection of aluminum "pots and pans" for defense will reach a total of nearly 14,000,000 pounds, enough to build about 2,800 fighting planes. A total of 6,700,000 pounds of scrap aluminum has already moved toward defense production, OPM reported.

Airport Projects Approved

In accordance with the provisions of section 303 of the Civil Aeronautics Act, the Administrator of Civil Aeronautics has issued certificates of air navigation facility necessity, authorizing the expenditure of Federal funds in the operation of the following projects:

ALABAMA	
Birmingham, Municipal Airport (WPA)	$46,546
Demopolis, Municipal Airport (WPA)	$46,546
Huntsville, Huntsville Field (WPA)	26,204
DISTRICT OF COLUMBIA	
Gravelly Point, Washington National Airport, PWA)	822,100
CALIFORNIA	
Los Angeles, Municipal Airport (WPA)	147,025
Monterey, Municipal Airport (WPA)	1,133,514
FLORIDA	
St. Augustine, Municipal Airport (WPA)	45,933
IDAHO	
Pocatello, Municipal Airport (WPA)	45,210
INDIANA	
Indianapolis, Municipal Airport (WPA)	631,550
KANSAS	
Dodge City, Municipal Airport (WPA)	10,691
MASSACHUSETTS	
Beverly, Beverly Airport (WPA)	228,971
MINNESOTA	
Marshall, Municipal Airport (WPA)	2,535
NEBRASKA	
Kearney, Kearney Airport (WPA)	277,235
Omaha, Municipal Airport (WPA)	3,740
Scottsbluff, Municipal Airport (NYA)	1,580
NEW YORK	
Rochester, Municipal Airport (WPA)	5,336
OKLAHOMA	
Norman, Max Westheimer Flying Field (WPA)	196,938
Oklahoma City, Municipal Airport No. 1 (WPA)	158,008
Tulsa, Municipal Airport (WPA)	51,386
OREGON	
Medford Municipal Airport (NYA)	3,980
TENNESSEE	
Knoxville, McGhee Tyson Airport (WPA)	551,983
TEXAS	
Waco, Municipal Airport (WPA)	109,687
WISCONSIN	
Town of Lake, Milwaukee County Airport (WPA)	29,673

Clippers To Stop at Suva

Clippers on Foreign Air Mail route 19, San Francisco to Auckland, New Zealand, are expected to make calls at Suva, Fiji Islands, beginning about the middle of October, according to the Post Office Department.

Chicago To Become Second Airport With Ground Traffic-Control System

Completion of Work Expected This Year

Expanded and improved to handle the traffic of eight airlines in addition to private flying operations, the Chicago Municipal Airport soon will become the second airport in the United States to have a ground traffic-control system. Equipment is being installed through a project conducted by the Work Projects Administration under supervision of the Civil Aeronautics Administration, and the project is expected to be completed this year.

The only other airport with a system of lights to regulate the movement of planes taxiing on the field in coordination with those landing is the C. A. A.-operated Washington National Airport. The same general idea is being applied at Chicago, but there are some differences in equipment and design.

At both the Washington and Chicago airports, red and green lights at the end of a runway indicate to a pilot whether or not he can use that runway for a take-off. At Washington a large green arrow at the end of a runway indicates to a pilot in the air that he is to use that runway for landing. A large red cross signifies that the runway is not clear for landing. At Chicago similar signals are made by an undulating arrow, lighted either red or green, at the end of the runways. The number of each runway is shown by 50-foot numerals in concrete, slightly raised from the ground and lighted.

Coordination of signals for landing and take-off of aircraft at Chicago is obtained by automatic controls. The master lighting control board is so hooked up that when the green light is given for a landing on one runway, it is impossible to turn on a green light for any other runway except a parallel one. Likewise, it is impossible to signal a landing and a take-off on the same runway at the same time.

For the guidance of airplanes after they have landed, there is installed at Washington a series of blue taxi guidance lights along the runways and taxi strips, which may be operated in sections from the central control board. The pilot of a landed plane simply follows these as the operator at the control board turns them on to guide him to hangar or loading area.

Blue narrow-beam projector lights at the ends of the runways are used for taxi guidance at Chicago. These flash on and off 20 times a minute. The pilot follows whichever one is flashed for him until he comes to the edge of the field. There are no taxi strips intersecting the runways, but a continuous taxi strip running along the outer edges of the field, which the pilot can follow without fear of cross traffic.

Traffic Pattern Needed For Training Fields

A definite traffic pattern is necessary to control all air traffic at airports used by trainees, the Civil Aeronautics Administration has reminded coordinators and flight contractors under the Civilian Pilot Training Program.

Use of a large bulletin board is advised. Some flight contractors have painted on the bulletin board the local airport traffic pattern. This procedure is recommended. If an auxiliary field is being used, traffic control should include both the base airport and the auxiliary field. At both fields bulletin boards should display traffic flow between the two landing areas.

The increased hazard as dusk approaches and other dangers should be discussed with flight personnel, as well as part 60 of the Civil Air Regulations.—Air Traffic Rules.

Engine Icing

(*Continued from page 246*)

where it remained constant for a short period as the ice formed around the temperature indicator bulb. The temperature then continued to rise until it stabilized at approximately 41° F. Notwithstanding these temperature indications a visual inspection through a glass enclosed aperture provided in the adapter showed the bulb and adapter to be coated with a heavy deposit of ice which was building up at a rapid rate.

Action Explained

After careful consideration this phenomenon was attributed to the insulating effect of the ice formed on the adapter walls and thermometer bulb. A brief review of adapter icing is necessary in order to explain this action. Consideration must be given to the fact that there are two heat sources acting

(*See* Engine Icing, *page 253*)

Change in Design Of Fuel Tank Vent Recommended

Recommendations on the location of fuel tank vents so as to comply with Civil Air Regulations and reduce the danger of stoppage are explained in Safety Regulation Release No. 65, issued by the Civil Aeronautics Administration.

Since locating vents so that they face directly forward into the airstream increases the chances of their becoming clogged by ice formation, dirt, bugs, or other foreign matter, the practice is not in compliance with part 04.622 of the Civil Air Regulations, the release points out. The regulations specify that "each tank shall be suitably vented from the top portion of the air space. Such air vents shall be so aranged as to minimize the possibility of stoppage by dirt or ice formation."

At present there exists no standardization of gasoline tank vents and the size, position and location of the vent pipes differ considerably on the different types of airplanes. The practice of facing fuel tank vents forward into the airstream is most prevalent in light airplanes. Because comparatively little flying with these airplanes is done in icing weather, the hazard presented by a clogged fuel tank vent has not received as much attention as it deserves.

The lease explains the technical aspects of this hazard and gives data supporting its recommendation of a tube bent at right angles with the open end facing downstream. Manufacturers also are urged to take steps to have forward facing tank vents on their planes out in service modified wherever this is possible without harming the fuel system.

Copies of the release may be obtained from the Publications and Statistics Division, Civil Aeronautics Administration, Washington, D. C.

Revisions Suggested On Span Distribution

Proposed revisions of the present material on span distribution in Civil Aeronautics Manual 04 are contained in Engineering Section Report No. 28, recently issued by the Civil Aeronautics Administration.

The report, entitled "A Simple Approximate Method of Obtaining the Spanwise Distribution of Lift on Wings," is a continuation of the series formerly called Aircraft Airworthiness Section Reports. It outlines a simple tabular procedure which consists of entering seven basic columns in a table and then proceeding with computations of a routine nature.

The need for a simplified span distribution method has been indicated by the increasing number of wing designs which, because of twist and the taper ratios involved, fall into a class where the formerly used arbitrary methods are not applicable. Opinions on the proposal are sought in a questionnaire attached to the report, which has been distributed to those most directly concerned with the problem. The report may be obtained from the Publications and Statistics Division, Civil Aeronautics Administration, Washington, D. C.

New Type Approvals

(Approval numbers and dates of assignment in parenthesis)

Type Certificates

Aircraft

Mercury, BT–120, 2 place open land biplane. Engine, Rearwin Ken Royce 7F. (744, 7–30–41)

Timm, S–160–K, 2 place open land monoplane. Engine, Kinner R–5 Series 2. (747, 8–28–41)

Gliders

Bowlus, BA–100, 1 place closed land monoplane, Class II. (8, 8–11–41)

Engines

Aviation Mfg. Corp., Lycoming O–435–A, 6 cyl. horizontal opposed air cooled, 175 hp at 2300 rpm at sea level pressure altitude. Incorporates automotive type Delco-Remy starter and generator, and AC fuel pump, and aircraft type vacuum pump. (228, 8–28–41)

Propellers

Roby, Inc., R–1, steel hub with wood blades, 5 ft. 10 in. to 5 ft. 8 in. diameter, controllable pitch, 80 hp, 2700 rpm. (771, 8–18–41)

New Models Added to Old Type Approvals

(Approval numbers and dates of approval of new models in parenthesis)

Aircraft

Vega, 35–67, 2 place open land monoplane. Engine, Menasco Super Pirate D4B. (Type Certificate No. 741, 8–29–41)

Propellers

Hartzell, 752–H, wood, 7 ft. 3 in. diameter, 4 ft. 3 in. pitch, 145 hp, 2050 rpm. (Approved Type Certificate No. 582, 8–22–41).

Sensenich, 92HBSPA, wood, 7 ft. 8 in. diameter, 7 ft. 2 in. to 6 ft. 8 in. pitch, 160 hp, 1850 rpm. (Approved Type Certificate No. 586, 8–12–41).

Aircraft Plant Expansion

The following aircraft firms were granted Certificates of Necessity for plant expansion during August, the Office for Emergency Management has announced:

Ampco Metal, Inc., Milwaukee, Wis., airplane parts, $111,000.

Bell Aircraft Corporation, Buffalo, N. Y., gun mounts, adapters and cradles, $143,000.

Borg-Warner Corporation, Detroit, Mich., aircraft engine clutch sets, $4,000.

The Cleveland Graphite Bronze Co., Cleveland, Ohio, aircraft engine parts, $180,000.

Clifford Manufacturing Co., Boston, Mass., airplane radiator cooler tubes, $115,000.

The Garrett Corporation, Los Angeles, Calif., aircraft coolers and seaplane anchors, $85,000.

Allan Hancock College of Aeronautics, Santa Maria, Calif., training of pilots, $38,000.

North American Aviation, Inc., Inglewood, Calif., airplanes and parts, $58,000.

Republic Aviation Corporation, Farmingdale, L. I., N. Y., airplanes, $31,000; pursuit type planes, $674,000.

Standard Parachute Corporation, San Diego, Calif., parachutes and parts, $10,000.

Farrel-Birmingham Co., Inc., Buffalo, N. Y., and Ansonia, Conn.; propulsion units and aircraft engine reduction units, $228,000.

Federal-Mogul Corporation, Detroit, Mich.; bushings and bearings for aircraft engines and airplanes, $5,000.

The Fenn Manufacturing Co., Hartford, Conn.; airplane and machine-gun parts, $77,000.

Northrop Aircraft, Inc., Hawthorne, Calif.; assembly of aircraft, $65,000.

Poulsen & Nardon, Inc., Los Angeles, Calif.; aircraft parts, $187,000.

Bell Aircraft Corporation, Buffalo, N. Y.; airplanes, interceptor pursuit aircraft, $218,000.

– Keep 'Em Flying –

14,100 July Increase In Aircraft Employment

During July 1941 there were 202,000 workers employed in the aircraft industry, 14,100 more than in June, estimates of the Department of Labor indicate.

The index number of aircraft employment in July rose to 7213.8 percent of the 1923–25 average, as against 6710.5 percent in June, and 3146.6 percent in July 1940. The aircraft industry's payroll index figure for July of this year was 9084.2 percent, compared with 8155.3 percent in June, and 3124.6 percent in July of last year.

Production

(*Continued from page 245*)

There were only 3 single engine seaplanes produced in the first half of 1941 against 10 in 1940, but multiengine seaplane output rose from 0 in 1940 to 5 this year. Single engine amphibian production was 0 in 1941 against 1 in 1940, but multiengine amphibian output soared from 0 in 1940 to 18 in 1941.

The statistics show that a total of 3,640 single engine aircraft was produced in the first 6 months of this year, up 65 percent from the 2,207 produced in the comparable 1940 months. Multiengine output for the two periods, respectively, was 116 and 82, an increase of 41 percent, while output of aircraft in the unclassified category in 1941 reached 19 units against 14 in 1940, a gain of 36 percent.

It must be pointed out that many aircraft included in these totals, both in the light plane and heavy multiengine categories, never were placed in civil use, but were routed into other channels.

During the first 6 months of 1940, the demand for increased engine horsepower in the light plane, used in the Civilian Pilot Training Program elementary course, was appreciable. This is even more striking in the first half of this year. In the 1940 period, output of single engine aircraft with powerplants of 51–70 horsepower rose to 1,496 from 466 such aircraft in the first half of 1939. In the first 6 months of this year, production in this category reached 2,265 planes, an increase over 1940 of 51 percent. However, in the 71–100 horsepower single engine category, the gain percentagewise was even higher. The 1941 production was 1,113 aircraft, an increase of 284 percent over the 290 produced in 1940.

In the 166–225 horsepower category, which includes aircraft used in the C. P. T. secondary course, the production of single engine aircraft in the 1941 period was 105, up 650 percent from the 14 produced in 1940, while the multiengine output rose 733 percent—from 3 in 1940 to 25 in 1941.

Output of multiengine aircraft of 601 horsepower and over was 90 in 1941 against 72 in 1940, an increase of 25 percent.

Grouped according to weight and engine classification, the statistics show that in the first half of this year, 2,328 single engine aircraft of not more than 1,300 pounds were produced, representing an increase of 65 percent over the 1,411 produced in the like 1940 period. In the 1,301–4,000 single engine category, the 1941 output was 1,290 units, a 74 percent increase over the 740 produced last year.

Following are statistics showing domestic civil aircraft production for the first 6 months of 1941 compared with production in the first half of 1940. Table I shows production by types, table II by engine horsepower, and table III by weight and engine classification.

Table I.—By Types

	January–June		Percent of increase or decrease
	1941	1940	
Landplanes:			
1–2 place:			
Single engine	2,880	1,786	+61
Multiengine	0	2	-------
3–5 place:			
Single engine	757	396	+91
Multiengine	7	3	-------
6–17 place: Multiengine	21	11	+91
18 place and over: Multiengine	65	66	-------
Seaplanes:			
Single engine	3	10	-------
Multiengine	5	0	-------
Amphibians:			
Single engine	0	1	-------
Multiengine	18	0	-------
Total single engine	3,640	2,207	+65
Total multiengine	116	82	+41
Unclassified	19	14	+36
Total	3,775	2,289	+65

Table II.—By Engine Horsepower

	January–June		Percent of increase or decrease
	1941	1940	
50 horsepower and under:			
Single engine	10	256	−96
Multiengine	0	1	-------
51–70 horsepower: Single engine	2,265	1,496	+51
71–100 horsepower: Single engine	1,113	290	+284
101–165 horsepower: Single engine	120	78	+54
166–225 horsepower:			
Single engine	105	14	+650
Multiengine	25	3	+733
226–300 horsepower: Single engine	9	21	−57
301–600 horsepower:			
Single engine	18	37	−51
Multiengine	1	6	-------
601 horsepower and over:			
Single engine	0	1	-------
Multiengine	90	72	+25
Total single engine	3,640	2,207	+65
Total multiengine	116	82	+41
Unclassified	19	14	+36
Total	3,775	2,289	+65

Table III.—By Weight and Engine Classification

	January–June		Percent of increase or decrease
	1941	1940	
Not more than 1,300 pounds:			
Single engine	2,328	1,411	+65
1,301–4,000 pounds: Single engine	1,290	740	+74
4,001–10,000 pounds:			
Single engine	22	42	−48
Multiengine	26	10	+160
10,001–25,000 pounds: Multiengine	85	67	+27
25,001 pounds and over: Multiengine	5	5	-------
Unclassified	19	14	-------
Total	3,775	2,289	+65

Engine Icing

(*Continued from page 251*)

on the adapter and thermometer bulb. The rear engine compartment heat results in a heat flow through the adapter walls into the interior and through the outside thermometer section into the bulb inside the adapter. Counteracting this heat flow is the cooling effect of the mixture passing through the adapter. The cooling effect of the mixture is greater than the heating effect of the rear engine compartment heat on the adapter. The inside surface of the adapter and the thermometer bulb is rapidly reduced in temperature to that of the mixture which under some conditions may be 32° F or below. Moisture condensed out of the air due to the drop in temperature and/or free water ingested will be deposited on the inside surface of the adapter and on the thermometer bulb. If the temperature of the mixture is 32° F or lower the deposited moisture forms ice.

After the ice film has formed the cooling effect of the mixture on the adapter wall and bulb is gradually reduced with the increase in ice deposited due to the insulating effect of the ice. The thermometer bulb and inside adapter walls are being cooled by the contact ice with the result that the bulb thermometer will indicate 32° F and not the mixture temperature which may be considerably below 32° F. The rate of cooling by the contact ice is substantially lower than that existing when the high velocity low temperature mixture is in direct contact with the bulb and adapter walls. The reduction is apparently sufficient so that the heat flow from the outside of the adapter as conducted through the walls and thermometer bulb assembly is great enough to melt the ice at the point or surface of contact and adhesion. This is substantiated by the fact that in all ice formation tests it has been observed that the ice plug in the adapter is not frozen to the walls, etc. It is entirely loose but suspended in the adapter due to the adapter shape and/or various protuberances. The heat under these conditions continues to flow into the bulb and is then under some conditions sufficient to raise the bulb temperature reading to above 32° F or, as in the case of the test results previously discussed, to 41° F.

Danger Evident

The danger of such erroneous temperature indication is self-evident. Unless the operating personnel is conversant with this insulating effect there is the danger of blaming any rapid loss of power on other factors than ice since the mixture temperature indicator would read above the icing temperature. Sufficient power may be lost before the pilot becomes aware of the true condition to make the heat de-icing system ineffective. Particular attention should be paid to the temperature indicator for evidence of this phenomenon during taxiing, take-off or an approach through an icing condition when carburetor heat would be reduced or operated fully cold.

CIVIL AERONAUTICS BOARD

OFFICIAL ACTIONS

Abstracts of Opinions, Orders, and Regulations

FOR THE PERIOD SEPTEMBER 1–15, 1941

ORDERS

ORDER No. 1217——*September 2, 1941*

Revoked student pilot certificate No. S–132817, held by James Leonard Lambert, Orlando, Fla., for piloting an aircraft on a civil airway while under the influence of intoxicating liquor, and other violations of the Civil Air Regulations.

ORDER No. 1218——*September 2, 1941*

Revoked student pilot certificate No. S–41697, held by Frans Eric Jens, Norfolk, Va., for piloting an aircraft over an open air assembly of persons at an altitude of approximately 10 feet and other violations of the Civil Air Regulations.

ORDER No. 1219——*September 2, 1941*

Suspended for 180 days private pilot certificate No. 19577, held by Walter P. Decovich, Youngstown, Ohio, for giving flight instruction to student pilots while not possessed of a valid instructor rating and other violations of the Civil Air Regulations.

ORDER No. 1220——*September 2, 1941*

Suspended for 90 days private pilot certificate No. 27090, held by Irving S. Glickman, Miami, Fla., for piloting an aircraft over an open air assembly of persons at an altitude of 300 feet in violation of the Civil Air Regulations.

ORDER No. 1221——*September 2, 1941*

Approved interlocking relationships contained in the applications of Juan Terry Trippe et al. and Pan American Airways Corp. and its subsidiaries.

ORDER No. 1222——*September 2, 1941*

Reopened the proceeding in the matter of the petition of Northeast Airlines, Inc. (formerly Boston-Maine Airways, Inc.), for an order fixing and determining a fair and reasonable rate of compensation for the transportation of mail over Route No. 27.

ORDER No. 1223——*September 5, 1941*

Revoked student pilot certificate No. S–296008, held by James J. McCollam, Camp Pendleton, Va., for piloting an aircraft over an open air assembly of persons at an altitude of less than 1,000 feet in violation of the Civil Air Regulations.

ORDER No. 1224——*September 5, 1941*

Revoked private pilot certificate No. 67979–41, held by Sterling P. Crawley, Ranger, Tex., for piloting an aircraft carrying a passenger who occupied a control seat when the dual controls had not been made inoperative, and other violations of the Civil Air Regulations.

ORDER No. 1225——*September 5, 1941*

Approved interlocking relationships contained in the applications of Edward J. S. Donovan and Canadian Colonial Airways, Inc.

ORDER No. 1226——*September 5, 1941*

Suspended for 90 days private pilot certificate No. 59649, held by Adolph Del Pero, Yuba City, Calif., for piloting an aircraft for hire and other violations of the Civil Air Regulations.

ORDER No. 1227——*September 5, 1941*

Denied the petition of United Air Lines Transport Corp. for reconsideration and reargument of its application to inaugurate nonstop service between Fresno and Sacramento, Calif., on Route No. 11.

ORDER No. 1228——*September 9, 1941*

Approved interlocking relationships contained in the applications of Thomas A. Morgan, Pan American Airways, Inc., and Pan American Airways Co.

ORDER No. 1229——*September 9, 1941*

Suspended for 60 days student pilot certificate No. S–303237, held by Lee Courtland Yocum, Jr., Tucson, Ariz., for piloting an aircraft acrobatically over a congested area and other violations of the Civil Air Regulations.

ORDER No. 1230——*September 11, 1941*

Granted Pennsylvania-Central Airlines Corp. permission to intervene in the application of Eastern Air Lines, Inc., for amendment of its certificate of public convenience and necessity for Route No. 40 so as to include beyond the intermediate point Florence-Sheffield-Tuscumbia, Ala., the intermediate points Huntsville, Ala., and Chattanooga, Tenn., and the terminal point, Greenville, S. C.

ORDER No. 1231——*September 11, 1941*

Denied petition of Pan American Airways, Inc., for reconsideration of its application for a certificate of public convenience and necessity authorizing air transportation between Los Angeles, Calif., and Mexico City, Mexico.

ORDER No. 1232——*September 9, 1941*

Granted application of Pan American Airways Company for a temporary certificate of public convenience and necessity authorizing the transportation by air of persons, property and mail between the terminal points Miami, Fla., and Leopoldville, Belgian Congo, via the intermediate points San Juan, Puerto Rico; Port of Spain, Trinidad; Belem, Brazil; Natal, Brazil; Monrovia, Liberia; and Lagos, Nigeria. (Opinion and order—docket No. 442.) (Signed by the President Sept. 10, 1941.)

ORDER No. 1233——*August 11, 1491*

Granted the application of United Air Lines Transport Corp. for amendment of its certificate of public convenience and necessity for Route No. 11 to include Salem and Eugene, Oreg., as intermediate points, and for amendment of its certificate for Route No. 57 to include Bellingham, Wash., as an intermediate point; denied application with respect to Klamath Falls, Oreg. (Opinion and order—Docket Nos. 274, 320, 440, 441.) (Signed by the President Sept. 8, 1941.)

ORDER No. 1234——*September 12, 1941*

Granted United Air Lines Transport Corp. permission to intervene in the application of Northwest Airlines, Inc., for a certificate of public convenience and necessity.

ORDER No. 1235——*September 12, 1941*

Granted Eastern Air Lines, Inc. permission to inaugurate service to Montgomery, Ala., through the use of Maxwell Field, on Sept. 15, 1941.

ORDER No. 1236——*September 12, 1941*

Denied request of Mid-Continent Airlines, Inc., that its application for an amendment of its certificate of public convenience and necessity for Route No. 26 be consolidated with the applications of National Airlines, Inc., Delta Air Corp., Braniff Airways, Inc., Eastern Air Lines, Inc., and Chicago and Southern Air Lines, Inc., for certificates and amendment of certificate of public convenience and necessity.

ORDER No. 1237----- *September 13, 1941*

Granted application of Colombian Petroleum Company for an amendment of its "Authorization to Navigate Foreign-Registered Aircraft in the United States and in the Canal Zone" as amended, so as to continue it in effect until October 15, 1941.

ORDER No. 1238---- *September 13, 1941*

Revoked private pilot certificate No. 9458-40 held by Gerald B. Brewster, Dexter, Me., for piloting an aircraft carrying three passengers when said aircraft was of a weight and engine classification and of an aircraft classification other than that specified in his rating record, and for other violations of the Civil Air Regulations.

ORDER No. 1239---- *September 16, 1941*

Granted Eastern Air Lines, Inc., permission to inaugurate nonstop service between Miami, Fla., and Vero Beach, Fla., intermediate points on Route No. 6, on September 15, 1941.

REGULATIONS

REGULATION No. 184. *September 5, 1941*

Adopted Amendment No. 129 of the CAR, REVISING THE QUALIFICATIONS FOR, AND THE RULES GOVERNING THE OPERATION OF, AIR CARRIERS, amending Parts 04, 40, and 61. The full text follows:

Effective October 1, 1941, Parts 04, 40, and 61 of the Civil Air Regulations are amended as follows:

1. By amending section 04.530 to read as follows:

"04.530 ACP Landplanes — Visual-contact day flying.—The same as specified in § 04.511 and, in addition, the following:

"(a) An electrically heated pitot tube, or equivalent, for the air speed indicator.

"(b) One additional portable fire extinguisher of the type specified in § 04.510 (j). (See § 04.5811 for installation requirements).

"(c) Fixed fire extinguishing apparatus of an approved type for each engine compartment.

"(d) Type certificated radio equipment as specified in Part 40.

"(e) A set of spare fuses. (See § 04.5822 for installation requirements).

"(f) A rate-of-climb indicator.

"(g) A storage battery—Same as § 04.513 (f)."

2. By amending section 04.5812 to read as follows:

"04.5812 Safety belt signal.—When a signal or sign is used to indicate to passengers the times that seat belts should be fastened, such signal or sign shall be located in a conspicuous place and so arranged that it can be operated from the seat of either pilot."

3. Parts 40 and 61 are amended by striking the phrase "air carrier dispatcher" or "airline dispatcher" whenever it appears and inserting in lieu thereof the phrase "aircraft dispatcher."

4. By amending section 40.203 to read as follows:

"40.203 Intermediate fields.—Applicant shall show intermediate fields or airports available for safe landings with the load authorized for the route, or part thereof, and located so that the aircraft, when flying along the proposed route, shall at no time be at a distance greater than 50 miles from an intermediate field or airport: *Provided*, That the Administrator may permit or require intermediate fields at greater or less distances if suitable or necessary to provide adequate safety along the proposed route."

5. By amending section 61.322, but not including any subsection thereof, to read as follows:

"61.322 Day and night operation over water.—The following rules will govern the operation of multi-engine aircraft in day or night operation over water."

6. By striking section 61.323.

7. By the addition of a new section, section 61.340, reading as follows:

"61.340 Seat belt sign.—An aircraft shall not be operated in scheduled air transportation unless a suitable means for warning passengers to fasten seat belts is provided."

8. By amending sections 61.531 and 61.532 to read as follows:

"61.531 Continuance of pilot competency.—If, within any 90-day period, a first or second pilot has not made at least two take-offs and landings in scheduled air transportation in aircraft of a particular make and model, such person shall not thereafter serve or be employed to serve as a first or second pilot in aircraft of that make and model in such transportation without having made at least three take-offs and landings in such aircraft with one-half to three-fourths useful load, and, if he is to serve in such transportation at night, without having made at least one of the three take-offs and landings at night. No persons shall be carried during such three take-offs and landings other than personnel of the air carrier or other air carriers and inspectors of the Administrator."

"61.532 (Unassigned)"

9. By amending section 61.720 (a) to read as follows:

"61.7020 (a) Visual-contact operation (day or night).—No air carrier aircraft shall be dispatched or shall take off without fuel and oil sufficient, considering the wind and other weather conditions to be encountered during the course of the flight, to complete flight to the first point of landing specified in the clearance, and thereafter to fly for a period of at least 45 minutes at normal cruising consumption for the flight."

10. By amending section 61.7021 (b) to read as follows:

"61.7021 (b) Instrument or over-the-top operation (day or night).—No air carrier aircraft shall be dispatched or shall take off without fuel and oil sufficient, considering the wind and other weather conditions to be encountered during the course of the flight, to complete such flight to the next point of landing specified in the clearance; and thereafter

"(a) To fly to and land at the alternate airport for such point designated in the clearance which is most distant from such point, and thereafter

"(b) To fly for a period of at least 45 minutes at normal cruising consumption for the flight."

11. By striking sections 61.7109, 61.71090 (a), 61.71091 (b), 61.71092 (c), 61.71093 (d), 61.71094 (e), 61.71095 (f), and 61.71096 (g), and inserting in lieu thereof the following new sections:

"61.7109 Instrument or over-the-top clearance.—The following rules with respect to weather conditions shall govern the dispatch of air carrier aircraft in air transportation for instrument or over-the-top flight."

"61.71090 Weather conditions at terminal or intermediate airports.—Air carrier aircraft shall not be dispatched in air transportation unless:

"(1) The observed weather information and current weather forecasts, pertaining to all landing points specified in the clearance, give sufficient indication at the time of clearance that the ceilings and visibilities are, or will be, when the flight would arrive at such point or points, at or above the minimums specified in the weather competency letter for letting-down-through; and"

(2) The alternate airports required by section 61.71091 are specified.

"61.71091 Alternate airport requirement.—"(a) When the observed weather information and current weather forecasts pertaining to a landing point specified in the clearance indicate, at the time of clearance, that the ceiling and visibility are, and will remain until the flight would arrive at such point, at or above the minimums specified in the weather competency letter for letting-down-through, there shall be at least one alternate airport specified on the appropriate flight clearance for such point.

"(b) When, at the time of clearance, the ceiling or visibility at a landing point specified in the clearance is below the minimums specified in the weather competency letter for letting-down-through, but the weather reports pertaining to such point at the time of clearance show a trend, by the hourly sequence and current forecasts, that indicates that the weather conditions will improve to or above such minimums upon arrival of the flight at such point, two alternate airports shall be specified in the appropriate flight clearance for such point.

"61.71092 Types of alternate airports.—"(a) If an alternate referred to in section 61.71091 is equipped with a radio range, the weather conditions existing thereat at the time of clearance must be equal to, or above, the ceilings and visibilities specified in the weather competency letter for letting-down through at such airport when using it as an alternate airport and the hourly weather report sequence and current forecasts shall show a trend that indicates that such weather conditions will continue or improve at such alternate airport until the flight shall arrive thereat. The weather minimums at such alternate airport shall in no case be less than one of the following:

"(1) A ceiling of 1,000 feet and visibility of 1 mile;

"(2) A ceiling of 900 feet with a visibility of 1½ miles; or

"(3) A ceiling of 800 feet with a visibility of 2 miles.

"(b) If an alternate referred to in section 61.71091 is not equipped with a radio range, the weather conditions existing thereat, at the time of clearance, must be equal to, or better than, broken clouds and a ceiling of 1,000 feet and a visibility of 2 miles, and the hourly weather report sequence and forecasts shall show a trend that gives sufficient indication of weather conditions continuing or improving until the flight shall arrive thereat: *Provided*, That the Administrator may, in the interest of safety, prescribe higher minimums at individual airports."

12. By amending section 61.7100 to read as follows:

"61.7109 Necessity for dispatching authorization.—No scheduled air-carrier flight shall be started except on the authority of an aircraft dispatcher whose name appears in the airman competency letter as qualified for the route, or part thereof, on which the flight takes off. No such authority is required for take-offs from an intermediate stop between points specified in the original clearance unless the flight has been delayed for any reason more than 30 minutes. (See section 61.7103 for new flight clearance.)"

REGULATION No. 185. *September 12, 1941*

Adopted Amendment No. 130 of the CAR, amending item 7 of Amendment No. 129, REVISING THE QUALIFICATIONS FOR AND THE RULES GOVERNING THE OPERATION OF, AIR CARRIERS. Full text follows:

Effective immediately, amendment No. 129 of the Civil Air Regulations adopted September 5, 1941, is hereby amended as follows:

Item 7 of Amendment No. 129 is hereby amended to read as follows:

"7. By the addition of a new section, section 61.342, reading as follows:

" *'61.342 Seat belt sign.*—An aircraft shall not be operated in scheduled air transportation unless a suitable means for warning passengers to fasten seat belts is provided.'"

Opinion 27 Available

Another opinion of the Civil Aeronautics Board is now available in printed form as an advance sheet. It is Opinion No. 27, Docket No. 323, United Air Lines Transport Corporation—Additional Mail Service—Philadelphia. It may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 5 cents. Include opinion serial number, docket number, and title when ordering.

Status of Parts of the Civil Air Regulations and Amendments

As of Sept. 15, 1941

All persons affected by the Civil Air Regulations, including those preparing for examinations for certificates, may obtain required Parts of the Regulations from the Publications and Statistics Division, Civil Aeronautics Administration, Washington, D. C., without charge.

ONLY PARTS NEEDED SUPPLIED FREE

For example, *pilots* are governed in general by Parts 01., 20., 60., and 98; *aircraft mechanics* by Parts 01., 04., 15., 18., 24., 98., and Section 60.32; and *aircraft engine mechanics* by Parts 01., 04., 13., 14., 18., 24. and 98. It should be remembered that individuals are entitled to receive free of charge only those portions of the C. A. R. which directly govern the activity in which they are engaged and this activity must be definitely stated when request is made.

HOW TO OBTAIN PARTS, AMENDMENTS, AND MANUALS

Those persons not affected by the C. A. R., but desiring all or any part of the Regulations for other purposes, may obtain them as follows: Those Parts on which a price is listed in the tabulation below are on sale by the Superintendent of Documents, U. S. Government Printing Office (shown as G. P. O. in table), Washington, D. C., and are not available for free distribution except as stated in the first paragraph.

Eventually, all Parts will be placed on sale; meanwhile, Parts not yet on sale (carrying remark in tabulation below "order from C. A. A. only") may be obtained without charge from the C. A. A. upon demonstration of valid interest on the applicant's part.

ALL AMENDMENTS TO THE CIVIL AIR REGULATIONS, AND NOTICE OF NEW PARTS, ARE PRINTED IN THE OFFICIAL ACTIONS SECTION OF THE CIVIL AERONAUTICS JOURNAL, AS RELEASED.

The tabulation below carries in the right-hand column the numbers of all effective amendments to each Part issued subsequent to its publication. Parts ordered from C. A. A. include all effective amendments, but when Parts are purchased from G. P. O. amendments must be requested separately from C. A. A.

Civil Aeronautics Manuals supplementing certain Parts with detailed interpretations of their respective provisions are issued. They are numbered the same as the Parts they supplement, and those Parts accompanied by Manuals carry appropriate notations. All Manuals are obtained from C. A. A. only, without charge.

PARTS CANCELLED AND UNASSIGNED

Cancelled Parts 00. and 03. now incorporated in Part 01.; cancelled Part 23. now incorporated in Part 51.; and cancelled Part 25. now incorporated in Part 24. Parts 90.–96., inclusive, cancelled. All other Part numbers not shown are unassigned.

Bound volumes of the complete Civil Air Regulations are no longer available. Parts and amendments are punched for filing in loose-leaf binders.

Part No.	Title	Date	Remarks	Price	Effective Amendments
	AIRCRAFT				
01	Aircraft Registration and Airworthiness Certificates.	6-1-41	In stock at C. A. A. and on sale at G. P. O.	$0.05	
02	Type and Production Certificates	3-1-41	In stock at C. A. A. and on sale at G. P. O.	.05	
04	Airplane Airworthiness (Manual 04, 2-1-41.[1])	4-1-41	In stock at C. A. A. and on sale at G. P. O.	.15	116, 129[4].
13	Aircraft Engine Airworthiness (Manual not issued).	8-1-41	Not in stock		
14	Aircraft Propeller Airworthiness (Manual 14, 12-1-38).	11-15-40	In stock; order from C. A. A. only		
15	Aircraft Equipment Airworthiness (Manual 15, 7-1-38).	11-15-40	In stock; order from C. A. A. only		
16	Aircraft Radio Equipment Airworthiness (Manual, 2-13-41[2]).	2-13-41	In stock at C. A. A. and on sale at G. P. O.	.05	
18	Maintenance, Repair, and Alteration of Certificated Aircraft and of Aircraft Engines, Propellers, and Instruments. (Manual 18, 6-1-41.)	6-1-41	In stock; order from C. A. A. only		
	AIRMEN				
20	Pilot Certificates	5- 1-40	In stock at C. A. A. and on sale at G. P. O.	.05	63, 65, 67, 75, 82, 83, 87, 88, 99, 101, 107, 110, 111, 112, 115, 117, 118, 125, 126, 127.
21	Airline Transport Pilot Rating	11-15-40	In stock; order from C. A. A. only		87, 101, 115.
22	Lighter-Than-Air Pilot Certificates	10-15-41	In stock; order from C. A. A. only		
24	Mechanic Certificates	5- 1-40	In stock at C. A. A. and on sale at G. P. O.	.05	44, 61, 73, 75, 87, 109.
26	Air-Traffic Control-Tower Operator Certificates	10-4-40	In stock at C. A. A. and on sale at G. P. O.	.05	87.
27	Aircraft Dispatcher Certificates	7-15-40	In stock at C. A. A. and on sale at G. P. O.	.05	74, 75, 87.
	AIR CARRIERS				
40	Air Carrier Operating Certification (Interstate)	11-1-40	In stock at C. A. A. and on sale at G. P. O.	.05	85, 89, 102, 129[4].
	AIR AGENCIES				
50	Flying School Rating (Manual 50, 12-40[3])	11-1-40	In stock at C. A. A. and on sale at G. P. O.	.05	87, 113.
51	Ground Instructor Rating	5-1-40	In stock at C. A. A. and on sale at G. P. O.	.05	75, 87, 128.
52	Repair Station Rating (Manual 52, 2-41)	5-1-40	In stock at C. A. A. and on sale at G. P. O.	.05	75, 84, 87.
53	Mechanic School Rating (Manual 53, 5-40)	9-15-40	In stock at C. A. A. and on sale at G. P. O.	.05	75, 87.
	AIR NAVIGATION				
60	Air Traffic Rules (Manual 60; Part 1, 12-1-40; Part 2, 8-1-40; Part 3, 12-1-40).	10-4-40	In stock at C. A. A. and on sale at G. P. O.	.10	80, 90, 93, 102, 104, 106, 108, 114, 119, 120, 121, 123, 124, Spec. Reg. Ser. 177, 127.
61	Scheduled Air Carrier Rules (Interstate)	1-1-41	In stock; at C. A. A. and on sale at G. P. O.	.05	91, 94, 97, 100, 102, 103, 115, 120, 122[4], Spec. Reg. Ser. 182, 129[4], 130.
	MISCELLANEOUS				
98	Definitions	11-15-40	In stock; order from C. A. A. only		
99	Mode of Citation of Regulations	11-15-40	In stock; order from C. A. A. only		

[1] Amendment as issued by C. & I. Div. Release No. 50, 6-3-41.
[2] Amendment No. 1 issued as S. R. Release No. 62, 8-12-41.
[3] Amendment 4-14-41 issued as C. & I. Div. Release No. 45.
[4] Effective 10-1-41.

U. S. GOVERNMENT PRINTING OFFICE: 1941

VOLTA